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ANNOUNCEMENT

With this issue the present editor retires from active management of the JOURNAL OF GEOGRAPHY. The work of continuing the JOURNAL will be taken up by the Department of Geography of the University of Wisconsin and the JOURNAL will be edited hereafter by Professor R. H. Whitbeck of that institution. Professor Whitbeck assumes all the rights and responsibilities associated with the editorship and will be in every way free to develop the JOURNAL along lines that seem to him valuable. He will select his own associates, outline his own policies and be bound by no precedents that have been established in the past.

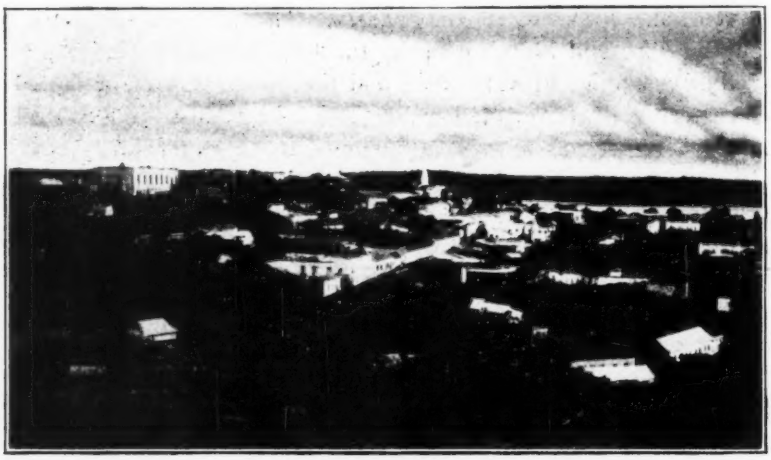
Present subscribers will continue to receive the JOURNAL during the terms of their subscriptions as if there had been no change in editorial management, and the September number may be expected soon after the opening of the schools in the fall. The retiring editor is more than pleased that the JOURNAL is to be continued by one who has already so fully earned the confidence of teachers and geographers. He bespeaks for the new editor a continuance of the support from the leaders in the field of geographic education—without which the task of editing the JOURNAL would have been an impossibility for these many years.

CIUDAD BOLIVAR

The Key to the Interior of Venezuela

By T. A. Béndrat, with illustrations by the author

A MASS of reddish looking huts and houses; among them some more or less bulky public buildings and towering above them all the massive but still imposing steeple of the Cathedral,—and all this gathering of structures rising from the waterfront of the Orinoco's southern bank, over a moderately inclined slope up to the very summit of a reddish hill with scant



Ciudad Bolívar

vegetation—that was the impression I had of Ciudad Bolivar, the city of the famous "liberador" of Venezuela, Simon Bolivar, as I came on the Norwegian steamer "Fargersand" from Barbados and rounded the projection in the southern band of the Orinoco caused by the Sierra del Torno.

A strikingly oriental aspect is lent to the city and landscape by the architecture of a large number of prominent buildings, and particularly by the hue of red that seems to be cast across the hill, glaring into one's eyes as one follows the ascending lines of cobble-stone and rock-paved streets and which seems to be

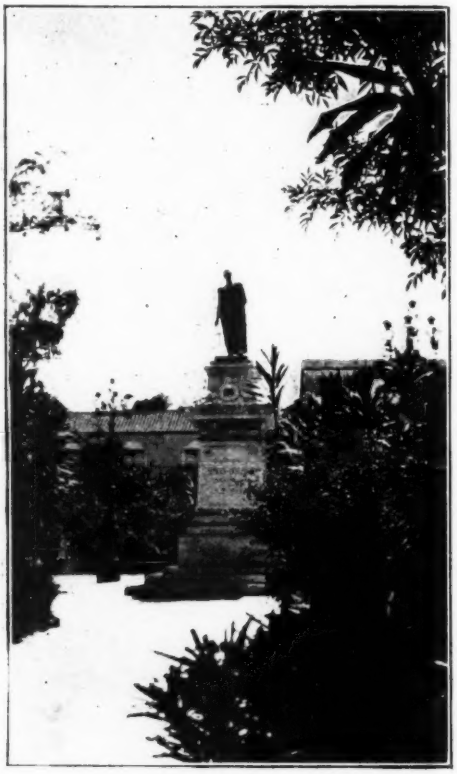
imparted to the building stone of every structure. This is true from the homely and shabby looking hut of the negro and the Venezuelan of mixed blood, up to the stately and magnificent residences of the well-to-do merchant class, who for the most part claim pure Spanish blood, although American, German and French born also live here.

The Cathedral near the park

As I ascended on a zigzag trail, the Cerro de Zamuro (vulture hill) rising back of the city, and looked from its ruin-crowned summit toward Ciudad, I was confronted by an entirely different picture—by Tropical South American scenery. For now the charming display of tropical plants in the countless "pateos" exposed to full view, combined with rather luxuriant vegetation

of the adjacent "morichales" and "potreros" to create a thoroughly tropical landscape.

Turning to the east, I was surprised to find another city, as it seemed at first glance, emerging from the surroundings; numerous white dots of various sizes encircled by a straight line of spotless white—a white city in itself—"The city



Statue of Simon Bolivar

of the dead." Close by, I beheld the silver band of the stream that made Venezuela famous, not presenting itself, however, in the full vigor and overwhelming majesty of one of the mightiest streams of the Western Hemisphere, but tame, very tame, because narrow, almost choked within the grip of that granite fist of Pluto. These narrows, evidently caused by dynamic

forces, measured only 0.62 miles from shore to shore, while the mouth of the Orinoco spans 47 nautical miles from Punta Barima to Boca Chica.

No wonder it was named "Angostura," "The Narrows," and the city thereafter. This city about 482 kilometers distant from the Port of Spain, was founded under the supervision of Governor Don Juacquim Moreno de Mendoza in the year 1764 and officially known as Santa Thorne de la Nueva Guayama and later named Angostura. In 1846 it adopted, in honor of General Simon Bolivar, the name of Ciudad Bolivar, which it still retains with

Ox team with two-wheeled cart loaded with rubber

the present population of 10,000 inhabitants. The city park, also bearing the same name, is graced with a masterpiece of sculpture, the statue of Simon Bolivar, surrounded by symbolic figures representing Venezuela, Colombia, Ecuador, Peru and Bolivia, amidst the most beautiful that Venezuelan vegetation can offer, and commands a view of the entire city.

Notwithstanding the inferior walks of the city and its insufficiently paved streets which slope parallel and also away from the Orinoco at a more or less steep gradient, thus rendering a walk extremely cumbersome and inducing a young lady, born of Venezuelan aristocracy and educated in Paris, to say to me; "True enough, it is my home, but I do not like it and I never

shall. I like Paris and Cayenne so much better;" in spite of its partial uncleanliness and homeliness, Ciudad Bolivar might in future become quite as important if not more so than Caracas. For while Caracas with its highways of trade and commerce controls only a comparatively small, although at present the most settled, portion of the country, Ciudad Bolivar, on the other hand, is the center of commerce for the entire drainage basin of the mighty Orinoco; and by far the greater part of Venezuela, the large tributaries of the main, Caroni, Caura and Apure, representing the pulsating arteries, as it were, of that vast body of a much promising country; all communicating with the heart, Ciudad Bolivar, and conveying the riches of the interior in form of copaiba oil, cocoa, coffee, rubber (Pará and Balata), hides, deerskins, gold bullion, tonga beans, tobacco, heron feathers, cattle, horses and other things, by way of Ciudad and Trinidad to the outside world.

Because of its peculiar situation at the "Angostura" of the stream, it can, by means of suitable and effective fortifications which would completely control the narrows, lock up, on the one hand, practically all of the interior down to the Rio Negro regions and as far back as the drainage area of the Apure and lock out, on the other hand, any foreign power, at will. Therefore, on account of these two virtues, Ciudad Bolivar may be justly considered the key to the interior of Venezuela, from a commercial as well as strategical point of view. One of the government's great tasks, during an era of peaceful settlement of inner and outer political relations, would be the gradual but steady development of the most important highways of the country for trade and commerce—the Orinoco and its tributaries and the protection of Ciudad Bolivar, by making the narrows a strategical point. For, it is not the portion of Venezuela, north of the Orinoco, to which the future belongs but, on the contrary, the vast region stretching south of that stream where are unmistakable traces betraying the presence of not only the useful but also the noble metals, and large areas of valuable timber as well as rubber trees, in those primeval forests, covering the slopes of the Guayama Mountains and bordering the main stream and its tributaries, and where numerous herds of wild cattle in the lowlands and plains between, invite and await the enterprising capitalist.

LESSONS ON THE CONGO BASIN

By Mary F. Kirchwey

Horace Mann School, New York City

CALL attention to the fact that the history and geography of Northern Africa were well known to Europeans long before the discovery of America, but that Central Africa remained an unknown region, and was so marked on maps, until a few years ago.

Who laid open this region to the world?

Who was Stanley?

How came an American to undertake this task?

(Here follows a brief sketch of Stanley's life as a young man, his position as reporter on the *New York Herald,* his mission to Africa as war correspondent, his finding of Livingston, and finally his interest in African exploration.)

Let us follow on the map Stanley's journey from the headwaters of the Congo to its mouth. It has been called an expedition of "unparalleled dangers and difficulties."

Let us try to find out what these great dangers and difficulties were.

(This is the class problem.)

What is the first thing of importance for us to know about the region?

Ans.—What kind of climate it has.

Have you any ideas as to what the climate is like?

Ans.—The Congo is near the equator so it must be very hot there.

Ans.—It is in the Doldrum belt so the rainfall must be heavy.

(Verify these conclusions by referring to the isothermal and rainfall maps. Compare temperature and rainfall with our own.)

What do you think about the healthfulness of a region that is so hot and damp?

Would you then say that the climate was favorable or unfavorable to Stanley's expedition?

There were no roads or paths in the region—how do you suppose Stanley traveled?

(Row-boats bought of the natives.)

Could he travel by night?

What kind of camping-ground do you suppose he found?

Ans.—Swamps—jungles—haunts of wild animals—villages of savage tribes.

As you follow the river you will find many rapids. Stanley had, at such places, to leave the river and travel for miles through the jungle.

What is the African jungle like?

(Show pictures and read selections from Stanley's "In Darkest Africa" to give idea of jungle—the swamps and marshes, the dense undergrowth, the darkness—and of the tremendous task it was to clear a path through it.)

What other dangers and difficulties beset his path?

Ans.—There are many wild animals in the region.

Ans.—There are poisonous snakes in the jungle, and poisonous insects.

Ans.—There are many savage tribes.

(Read Paul Du Chaillu's account of the gorilla and other animals of this region, and Stanley's description of the Pygmies and other savage tribes.)

Now let us mention once more the dangers and difficulties that Stanley encountered. (Summary.)

Ans.—Extreme heat—excessive rainfall—unhealthy climate—great swamps, lack of roads—falls and rapids—dense forests—hostile tribes—wild animals—poisonous insects.

What was accomplished by Stanley's expedition?

Ans.—An unknown region was made known to the world.

Was this worth all the hardships Stanley endured?

Develop by questions and suggestions the following facts:

Europeans went into the country as soon as Stanley made known its resources and through their influence much has been done—

1. To stop the slave trade of the region.

2. To prevent cannibalism and to improve the condition of the natives generally.

3. To open up the resources of the forests—the valuable rosewood, mahogany, ebony, &c., and the rubber, gums, and dyewoods.

4. To establish communication with the outside world by means of roads, railroads, steamship lines, &c.

THE MODELLING OF PHYSIOGRAPHIC FORMS IN THE LABORATORY

By Wm. Herbert Hobbs

University of Michigan, Ann Arbor, Mich.

FOR several years comprehension of the meaning of the contour map has been given prominence in the elementary laboratory work of both geology and physiography at the University of Michigan. With specially devised but relatively simple apparatus, the student prepares in the laboratory a contour map from a model representing some topographic relief form, and of this he checks the accuracy through a series of temporary shore lines formed upon the model as it emerges in successive stages while a water envelope is being drained away.* The apparatus for this work is now regularly manufactured by Eberbach & Son of Ann Arbor, and has been used in a number of universities and high schools.

The map apparatus calls for a number of water-proofed models of convenient size, each representing as far as may be a special topographic relief form. A number of such prepared by Mr. I. D. Scott have been used, and are also found of value as type illustrations for demonstration in the classroom. This purpose of the small type model had already been met in the Curtis models, which have the advantage of being provided with a case, thus allowing an arrangement on shelves after the manner of pamphlet cases duly labelled. Some such development of the "type model" seems likely to have a much larger application in physiographic study in the future; and the student who pursues the subject with a view to teaching will be greatly benefited by a little experience in preparing such models.

The difficulties in the way of preparing satisfactory models of this kind are many. Sufficiently accurate maps are no longer wanting, but their scale is generally too small to permit of convenient use without enlarging a number of times. Further, no

*Apparatus for instruction in geography and structural geology; I. Map contours. School Science and Mathematics, Vol. VIII, Oct., 1908, pp. 566-570. An improved form is described in new laboratory methods for instruction in geology. Jour. Geogr., Vol. 7, 1909, pp. 97-104.

accurate device has been available to fix the desired altitude on the model for any given point. In the third place, the clay which is generally used, through drying between successive periods of work, becomes cracked, shrunken, and otherwise deformed unless skillfully blanketed with moist cloths. The last difficulty is completely overcome by substituting the artists' modelling clay manufactured with a suet base and sold by the A. H. Abbott Co. of Chicago. This clay retains its form indefinitely and is suffi-

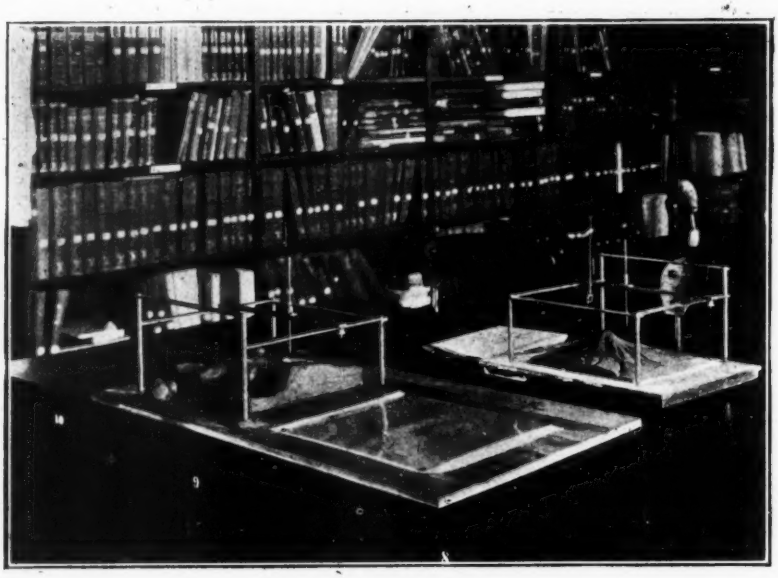


Fig. 1 Modelling device (to the left and front) in use with enlarged map in place beneath the celluloid "position plate." The instrument to the right and rear is in use to model Mt. Shasta, directly from the atlas sheet, a checker work of pencilled lines having been drawn over the latter for the purpose. The model beneath the instrument to the front represents a glacier-sculptured district within the Yellowstone Park in an incomplete stage of its preparation.

ciently firm, although it softens at once under the warmth and pressure of the hand. When the first model has been cast, the same clay may be used again and again.

To fix accurately the height of the model at any given point, a simple modification of the map making device is employed (see Fig. 1).* In place of the tank of the map apparatus, a light metal frame with graduation is substituted, the vertical supports

* This modelling device is now manufactured by Eberbach & Son of Ann Arbor.

ending below in sharp pins. When in use this frame is set up upon a wooden base (a simple drawing board of the usual type may be utilized) and is then not easily displaced. Location and altitude upon the model are determined in the manner already described for the map apparatus.

For convenient reading of location and elevation of any point upon the map which it is desired to model, it is found advisable to enlarge the map to the area of the modelling device. This can be done either by use of a pantograph or by the photographic method of enlargement. Thus enlarged, the map is covered by a thin plate of celluloid ruled in a checker work of inches and halves of an inch. This ruling can be carried out with a straight edge and any sharp steel point such as a strong darning needle, and the scratches afterwards darkened by rubbing lamp black into them. Outside the checker work of lines four perforations are made near the corners, so that thumb tacks can be used to fasten the transparent "position plate" over the enlarged map to the drawing board in a convenient position beside the modelling device (see Fig. 1).

A more experienced worker might model directly from the smaller scale original map, a checker board of pencilled lines being first drawn over it, each square of the checker work representing a square inch of the finished model.

Before beginning the model, the worker will decide whether the relief of the district is sufficiently prominent to permit of using a natural vertical scale. In regions of moderate relief the vertical scale should be a number of times the horizontal. In order to allow for the use of different vertical scales in different models, a number of graduated rods for the altitude gauge have been prepared, one having the inch divided into eighths, another into tenths, a third into twelfths, etc. The elevated side of the modelling frame permits a freer use of the hands upon the model, and this side can be placed in front or to the right as is found most convenient.

Beginning at any point of the map, the intersection of a heavy contour line with one of the guide lines of the "position plate" is noted. Both position and elevation of this point are fixed in the modelling frame, and the clay is built up beneath it to that height. With the fingers the clay is now roughly shaped in

various directions from this point, the altitude gauge is advanced along the same guide line to the intersection with the next heavy contour and its elevation adjusted for that point, As before, the surface of the clay is shaped in advance and on the sides so as roughly to conform to the indications of the map; and the same process is repeated until the work of shaping is finished. Corrections for intermediate positions may be carried to any desired refinement which the scale and the accuracy of the map permit.

A STUDY OF SEVENTY-FIVE COURSES OF STUDY IN GEOGRAPHY

By Charles M. Reinoehl

Teachers College, New York City

Age and distribution

20 State Courses, None over three years old, only four older than one year. 55 City Courses, Five older than four years, nearly one-half only one year old or less. All sections of the country represented.

The number and the per cent of the courses of study that omit Geography in the grades. (75 Courses of Study)

Grades,	1	2	3	4	5	6	7	8	9
City,	31	25	12	0	0	0	7	23	51
State,	17	15	4	0	0	2	0	8	19
Total,	48	40	16	0	0	2	7	31	70
Per cent,	64	53	21	0	0	2.6	9.3	41	93

Table showing the number (No.) of Courses of Study that treat World (w) Geography, and the number that treat Home (h) Geography in the *Fourth Grade*. Of those treating World Geography in this Grade, the number that go through North America only (N. A.).

(X). Grades for which outlines are given.

	No.	w.	h.
1-7,	9	7	2
1-8,	16	10	6

	No.	w.	h.
1-9,	3	2	1
2-7,	5	3	1
2-8,	2	1	1
3-7,	10	4	3
3-8,	10	4	2
3-9,	2		1
4-7,	2		2
4-6,	2		
4-8,	9	6	3
4-9,	1		1
4, 5. 6. 7,	1	1	
4, 5, 7, 8	3	2	1
Total,	75	40	24
Indeterminate,		11	
Per cent,		53	32

Table showing the topics in Geography and their distribution by Grades in the Public Elementary Schools of 55 Cities and 20 States.

Grades.	3	4	5	6	7	8
Home Geography,	*19*	12	2			
City Geography,	*17*	10	3	1	1	2
County Geography,	*14*	4	2	2	2	
State Geography,	5	*12*	9	7	5	7
Earth as a Whole,	9	*26*	12	3	3	5
United States,		18	*21*	17	15	9
North America,	1	22	19	*26*	12	1
South America,	1	6	*20*	*20*	17	5
Europe,		1	12	18	*24*	8
Asia,		1	13	13	*28*	5
Africa,	1		13	14	*26*	6
Australia,			13	13	*26*	6
Industrial Geography,		2	2	1	2	*9*
Commercial Geography,			2	1	5	*7*
Mathematical Geography,				1	5	*5*

The order of treatment for continental Geography. In 20 States.

First time over.

No.	N. A.	S. A.	Europe.	Asia.	Africa.	Australia.
8	1	2	3	4	5	6
1	1	2	4	5	3	6

3 over but once, 8 indeterminate

Second time over.

7	1	2	3	4	5	6
2	1	6	2	3	4	5
1	6	1	4	5	2	3
1	6	1	2	4	3	5
1	1	3	2	4	5	6

1, any order, New York. 7, indeterminate.

The order of treatment for continental Geography. In 55 Cities.

First time over.

No.	N. A.	S. A.	Europe.	Asia.	Africa.	Australia.
24	1	2	3	4	5	6
1	1	2	6	5	3	4
1	1	6	2	3	5	4
1	1	6	2	3	4	5
1	1	5	2	3	4	6
1	2	1	6	3	4	5

22, indeterminate. 4, part way over.

Second time over.

32	1	2	3	4	5	6
2	1	2	6	3	4	5
2	6	5	1	2	3	4
1	1	2	5	3	4	6
1	1	6	5	2	3	4
1	1	5	6	2	3	4
1	4	5	6	1	2	3
1	5	6	1	2	3	4

14, indeterminate.

NOTES

THE SHAPE AND SIZE OF THE EARTH.—The shape of the earth is a matter that is usually considered of little moment in geography, except as it is our custom to emphasize its lack of true sphericity. As a matter of fact, the sphericity of the earth is of vital moment to all mankind and the slight departure from sphericity is of little significance except to those few people who have to study the exact shape of the earth or the minor details that result from this oblateness of the earth sphere. On a six foot globe representing the earth, the oblateness would be indicated by a difference in the equatorial and polar diameters of about one twenty-sixth of an inch—an amount too small to be detected by the naked eye. It is therefore the sphericity and not the oblateness that is of the greatest significance to most people of the earth and that significance is by no means slight. In the first place, a sphere is the geometrical form that contains the greatest surface with the least volume. That is, the earth could not have the same volume and present the same area for human occupation if it were any other shape than a sphere. As a direct result of the sphericity we have the practically equal pull of gravity, the world over, a matter of deep significance to all commerce. The almost universally adopted and only sane system of weights and measures, the metric system, is a direct result of the fact that a given volume of distilled water has the same weight in all parts of the earth. Therefore, with a practically uniform system of weights and measures based on this fundamental consideration, it is possible to carry on commerce over the world with great ease because the shipper and the consumer can measure shipments with the same units. Thereby there is a great saving of cost and a prevention of possible misunderstandings and errors. The importance of the equal pull of gravity is seen in many other ways. Vessels arrive at their destination with the same weight of cargo with which they started and a given weight can be moved with the same amount of power at sea level in all parts of the world. Therefore the computation of the strength of engines, or the structural need of pieces of engineering construction can be calculated for one locality and be found true for

all localities, again a matter of great importance in the business world to-day.

Gravity has also to be taken account of in other ways than in considering weights. If gravity is always thought of from the standpoint of the globe, then "up" is away from the pull of gravity, practically away from the earth's center, and "down" is in the opposite direction. Thinking of these words in reference to the earth form that determines their measure, we are freed from the necessity of trying to explain in a roundabout way why people in the antipodes have no suspicion that they are standing head down, from our erroneous and one sided viewpoint. Plants grow away from the center of gravitative pull and roots mostly grow downward or towards the center of gravitative pull and thus the bulk of the plant forms have their masses in the line of gravity and hence support themselves, as it were. Similarly, if the idea of a level surface is thought of as one that has every part of its plane at right angles to the pull of gravity, there is no difficulty in conceiving the ocean surface as a great true plane. This departure of the true level surface from the small tangent facet which we use in a carpenter's or mason's level is thus easily explained and understood and level comes to mean a surface pulled upon by gravity equally in all parts. This is the attitude we assume in repose, that the heart action may not be hindered by working against gravity as is the case when we stand in an upright position. Upright is again a word that has its gravitative significance and thus repose and the upright position are antitheses of our possible relations to gravity.

Because of the sphericity of the earth, there is an equal rate of progression of sunlight about the earth, as the earth rotates, and hence the possibility of measuring off the progression of sunlight about the earth is due to earth rotation, but the measurement of this rotation in natural units is due to the earth's shape. If the earth were a rectangular block, for instance, the sunlight would not gradually creep about the earth, but would go by leaps. The whole of any face would be all turned into sunlight when the edge of the face was turned toward the sun, just as the small boy controls the whole of the pantry shelf when he gets his eye to the level of the edge of the shelf.

The natural device of measuring distance over the world in degrees is due to the fact that any section of the earth presents a circular outline which is only true of a sphere. Therefore distance on the circular parallels or the circular meridians is measured in degrees just as the parts of any other circle are measured in degrees. Perhaps the largest use of this idea is seen in the case of navigation where the usual routes on the open sea are great circle routes. Except on the equator, which is itself a great circle, sailing routes between points on the same parallel generally do not follow the parallel but the great circle which includes the point of departure and the points of destination. The great circle is the boundary or perimeter of a hemisphere which is formed by cutting the earth so as to bring any two points in question into the same sectional plane.

This can be easily illustrated by experiment with an orange or ball of clay so that it will be easily understood. As a result, the seeming absurdities of the sailing routes between San Francisco or Vancouver and Yokohoma will be easily seen to be anything but absurd.

Size of the Earth.

Just as the uniformity of progression of sunlight is due to the sphericity of the earth, so the rate at which the sun progresses about the earth is due to its size. If the earth were twice the size, the sunlight would have to pass over a larger area in a given time and the seeming rate of progression would be largely increased. The same is true of the rate at which the tidal influence moves through the waters of the ocean, and if the rate of tidal movement were increased, its effects on shipping and the shoreline would be correspondingly increased, and the question of conquering the sea by ships would be a different problem from what it is now on those coasts where the tides are powerful.

Again, certain factors of gravity are due to the size of the earth just as the equivalence of gravity in all parts of the earth is due to the shape of the earth. If the earth were twice the size, the length of the seconds' pendulum would be the same practically in all parts of the world, but that length would not be the length we are familiar with in the Grandfather Clock, because

that length is adjusted to an earth of the size of ours, with the well known gravitative pull which has been measured. Gravity varies inversely as the square of the distance, and the greater the distance the less the pull of gravity.

Again, the present density of population of the earth and the slowness of the development of the knowledge of the world in early historic time are matters of the size of the earth. If the earth had been smaller and the population had been the same, the early peoples would more quickly have outgrown their areas of origin and would have come into contact and have conquered the world. Even to-day the world is so large that there is room on it for a great increase in the total population and certain parts of it are so far removed from the occupied areas that they are little known even to the most advanced and pushing investigators of modern time. Commercially, the size of the earth has been a large factor throughout history. The enormous distances involved in conquering the great oceans and even the great continents held back the development of world commerce on a large scale until really after the invention of the steam engine. This brought previously distant regions into close and sympathetic relations, whether on land or sea.

La Paz, Bolivia.—La Paz, Bogota, Quito and Caracas are the five highest capitals in the world, but La Paz exceeds its nearest rival, Quito, by a half mile in elevation above sea level. Its elevation is 12,250 feet. In temperature it varies but little during the year, but the diurnal variations are sometimes very great—as much as 50 degrees in twenty-four hours—when the thermometer may drop from 80 degrees or 82 degrees F. at noon to below freezing at night.

The great Bolivian plateau, the most remarkable high plateau in the world, if one exceeds Thibet, and more remarkable in many ways than this comparatively unknown country, is from 11,000 to 13,000 feet high, lies between two ranges of the Andes running from northwest to southeast, and is about 500 miles long and 80 miles wide. Its area is approximately the same as the State of Ohio. It is comparatively level and semiarid. Where irrigation can be effected the land is remarkably productive, but the range of crops is limited to such as will grow at this immense altitude.

La Paz can be reached by railroad from the south either through Chile or the Argentine Republic or from the northwest through Peru. The Antofagasta Railway from that port in Chile connects directly through Oruro with the railway to La Paz; or from Mollendo, on the coast of Peru, the railroad leads directly to Puno on Lake Titicaca, whence by steamer across the lake connection is made with Guaqui and from there by railroad to La Paz. There is a break in the connection with the Argentine railway system which it is expected will be closed in a short while. The railroad from Arica is under construction, and when completed will give a third Pacific connection.

In coming to La Paz a stranger is always surprised at its location. Considering its elevation of about 12,000 feet, he naturally expects to find a city on a hill. In fact, he finds La Paz at the bottom of a deep canyon, and first sees the city on looking down into what appears an abyss shut in on all sides. In reality it is the canyon of the Chuquiapu River. The canyon is 1,500 feet deep, and down this, by numerous curves and twists, the railway winds its way from the height of La Paz into the city. Seen from the height and from the railway the city is one of the most picturesque in South America, in many ways the most picturesque.

—From *Bulletin of American Republics,* January, 1910.

Farm Products in the United States.—The year 1909 was the most prosperous agricultural year the United States has ever had. The value of its farm products reached the enormous sum of $8,760,000,000, and the gain over last year was $869,000,000. During the last eleven years the value of the agricultural products of the United States has practically doubled.

Seven Large Crops.—The most striking feature in the world's agriculture is the corn crop of the United States, which in 1909 amounted to 2,772,000,000 bushels, a quantity greater than in any preceding year except 1906. The crop was valued at $1,720,000,000 or 100,000,000 more than in 1908. This corn came up out of the soil and out of the air in one hundred and twenty days—$14,000,000 a day for one crop. The price per bushel on November 1st was 62 cents, one of the highest prices corn has ever attained to. The United States produces over 80 per cent.

of the world's crop and therefore reaps the benefit of this large production.

The second crop in value in the United States is that of cotton, and this year's crop is easily the most valuable one to the farmer that has ever been raised. With cotton lint selling at 13.7 cents at the farm and cotton seed selling at $25 a ton, the lint and seed of this crop are worth $850,000,000 to the farmer. As in corn, so in cotton, the United States leads all other nations, producing two-thirds of the world's crop, and the nations of Europe are dependent upon it for the supplies to run their cotton factories which are the source of so much wealth to Great Britain, Germany, France and other countries.

Third in the order of value among the crops is wheat, worth $725,000,000 at the farm, exceeding all previous values by a large amount. The average price has been $1.00 per bushel, and the quantity produced about 737,000,000 bushels, an amount exceeded only by the crop of 1901.

Hay, which long held the third place, has now taken fourth rank, with a crop of 64,000,000 tons, valued at $665,000,000. The fifth crop is oats, worth at the farm about $400,000,000. The quantity was the largest ever produced, 1,007,000,000 bushels.

Three hundred and seventy-six million bushels of potatoes were produced in the United States last year, an increase of 25 per cent over the average. The total value was $212,000,000; the selling price per bushel about 60 cents. The tobacco production last year amounted to 949,000,000 pounds, the largest ever raised and one-third greater than the average. The value of the crop was $100,000,000.

Other crops, less than $100,000,000 in value, are sugar, of which 500,000 tons were beet sugar and 364,000 tons cane sugar, the total value of both including molasses and syrup amounting to $95,000,000; barley, of which 170,000,000 bushels were produced, valued at $88,000,000 with an average price of 53 cents per bushel; flaxseed, 25,000,000 bushels, valued at $36,000,000; rice, 1,000,000,000 pounds, valued at $25,000,000; rye, 31,000,000 bushels, valued at $23,000,000; and hops valued at $8,000,000.

The total value of all crops in the United States last year was $5,700,000,000 cereals alone amounting to $3,000,000,000. In addition to this the animal products were worth about $3,000,-

000,000, making the enormous value mentioned in the beginning of $8,760,000,000.

SILK IMPORTATIONS INTO THE UNITED STATES.—Imports of unmanufactured silk into the United States made their highest record in the calendar year just ended, their total value having been 75½ million dollars, against 73 million in 1907, the previous high value record, while the quantity imported in 1909 exceeded that of 1907 by over 40%.

Figures recently prepared by the Bureau of Statistics of the Department of Commerce and Labor indicate a remarkable growth in the domestic silk industry. In 1870 the importations of raw silk amounted to but 738,381 pounds; in 1880, 2½ million; in 1890, 4½ million; and in 1900, about 8¼ million, while during the decade beginning with 1900 the importations averaged 15 million pounds per annum, the figures for 1909 being 22¼ million pounds. Measured by values, the growth has been from less than 4 million dollars in 1870 to 11½ million in 1880, 18½ million in 1890, and 31¾ million in 1900 and 74 million dollars (exclusive of waste) in 1909.

The rapid growth in imports of raw silk is in marked contrast with the almost stationary importations of silk manufactures. In the period from 1870 to 1909 the value of raw silk importations increased 70 million dollars, or more than 16-fold; while that of manufactured silk importations increased 5⅝ million, or but 21%. The importations of silk manufactures reached their maximum in 1882, when they were valued at $41,415,984, that sum being also nearly reached in 1890, when the total was $41,085,990. In 1909, the closing year of the period under review, the total was $32,963,162, against $29,719,565 in 1900, $35,504,217 in 1880, and $27,123,372 in 1870.

Japan, Italy and China are the chief sources of the raw silk used by American manufacturers. Of the importations during 1909, 55% came from Japan, 20.7% from Italy, 20.2% from China, 3.4% from France, and .7% from other countries. In the period, 1900-1909, imports of raw silk from Japan have increased from 3 million to over 12 million pounds, and in value from 12⅓ million to 42⅓ million dollars; from Italy, from 2 million to 4½ million pounds and, measured by value, from

9½ million to nearly 18 million dollars; those from China, from 2½ million to nearly 4½ million pounds and their value, from 8 million to 11 million dollars; and those from France, from 362,241 pounds, valued at $1,609,117, to 761,564 pounds, valued at $2,237,970 in the year just ended.

The silk manufactures imported into the United States come from France, Germany, Switzerland, Japan, the United Kingdom, Italy and China. Roughly speaking, France supplied last year nearly one-half, Germany about one-sixth, Switzerland about one-eighth, Japan about one-eleventh ,and the United Kingdom one-twelfth of the 33 million dollars' worth of silk manufactures imported in the calendar year 1909.

IMPOVERISHING THE SOIL.—The great grain regions of Central Canada are producing larger crops of wheat every year, but this is because the acreage sown to wheat is rapidly increasing and not for the reason that anything is yet being done to maintain the fertility of the soil. The statistics in "Canada West," one of the recent publications of the Department of the Interior, Canada, show that the average yield per acre, in Manitoba was 26 bushels in 1902, 14.22 bushels in 1907, and 17.28 in 1908; Saskatchewan, 25.41 bushels in 1901, 14.9 in 1907 and 13.60 in 1908; Alberta, 24.58 bushels in 1901, 22.13 in 1907 and 22.60 in 1908. In fact, the pioneer farmers of that great, new source of wheat supply are following the same system of incessant cropping of the land that has reduced the average production in our own great wheat states to 13.5 bushels per acre while in England it is 30 bushels, in Belgium, 34.5 bushels and in Germany, 27 bushels. The needs of the world, of course, will ultimately require that these exceptionally fine wheat lands be won back to their early fertility by scientific tillage.—From *Bulletin of American Geographical Society*, May, 1910.

PEARY'S SOUNDINGS FROM CAPE COLUMBIA TO THE POLE.—On March 22 last, the Hon. J. Hampton Moore, of Pennsylvania, spoke in the House of Representatives, Washington, on Commander Peary's discovery of the North Pole. He gave considerable hitherto unpublished information, the most important relating to the soundings that were taken on the ice journey be-

tween Cape Columbia and the Pole. The following data are from Mr. Moore's speech which was printed in full at the government printing office. Here is the table of soundings:

Sounding by	Latitude.	Fathoms.	Remarks.
	83° 7′	0	
Marvin	83° 10′	98	Edge of glacial fringe.
Marvin and McMillan	83° 25′	96	
Bartlett	83° 53′	110	Edge of continental shelf.
Marvin	84° 29′	825	
"	84° 39′	580	
"	85° 23′	310	
"	85° 33′	700	No bottom
Bartlett	87° 15′	1,260	" "
Peary	89° 55′	1,500	" "

In Commander Peary's notes he says that the sounding equipment consisted of two reels of specially made piano wire of 1,000 fathoms each, and three 20-pound leads with clam shell device for grasping samples of the bottom. One of the reels and leads was carried by Bartlett with his advance party and the main party carried the other reel and two leads. Portions of the main party's wire and the two leads were lost at various times, in hauling up, probably on account of kinks in the wire. When the main party sounding of 700 fathoms, no bottom, was made, this was all the wire they had left. When Bartlett ran out 1,260 fathoms, he stopped on account of a kink in the wire which he feared would part when the wire was hauled up. At this time, his 1,000 fathoms of wire and the remaining 500 fathoms of the other reel had been combined. Peary took this combined wire and made his sounding with it near the Pole, 1,500 fathoms, no bottom, and was hauling up when the wire parted again and he lost nearly all of it and the last lead. These facts explain the irregularity of the soundings that did not get bottom. Commander Peary adds these comments:

"The sounding of 310 fathoms at 85° 23′ naturally impressed me at once as surprising and when Marvin reported the result to me, immediately after taking the sounding, I at once asked him if he was sure that he had the bottom, and he replied that he was, as the fact of this pronounced shoaling from 825 fathoms to 310 impressed him at once, and he made sure that his depth was correct.

"Again, when the sounding of 700 fathoms and no bottom was made about 10 miles further north, we both spoke of the peculiar

fact of this outlying ridge with deeper channel intervening between it and the continental shelf, and Marvin again said that he was sure of his 310 fathoms reading.

"Had it not been for the loss of the last lead and practically all of the wire while making the soundings at the Pole, I should, on the return, have interpolated other soundings.

"The profile indicates that a line of 5-mile interval soundings from Cape Columbia to the eighty-sixth parallel might develop a particularly interesting profile of the bottom of the Arctic Ocean."

Mr. R. A. Harris, the tidal expert of the Coast and Geodetic Survey, reported on Peary's tidal records which consisted of practically unbroken series of hourly readings of the height of the tide, taken night and day, at Cape Sheridan for 231 days, Cape Columbia, 29 days, Cape Bryant, 28 days, and Fort Conger, 10 days. Mr. Harris says that, in order to show the full geographical value of the results, they must be considered in connection with all other Arctic tidal results. This work is now in progress. Peary's tidal observations leave little to be desired between Cape Morris Jesup and Cape Columbia; but there are long stretches of the Arctic Coast where nothing is available. This is especially true of the Russian coast and the western and northern portions of the Arctic archipelago. Peary's results show that the tides along the northern coasts of Grantland and Greenland differ in many respects from what had been supposed. For example, his records prove that the tide occurs three hours earlier at Cape Columbia than at Cape Sheridan, and not later, as has been assumed.—From *Bulletin of American Geographical Society,* May, 1910.

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Edited by

RICHARD ELWOOD DODGE

Professor of Geography

Teachers College, New York City

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